KJ28N20CF

N-Channel Enhancement Mode MOSFET

1. Product Information

Features

VD-MOSFET technology

Improve switching performance

Applications

Uninterruptible Power Supply (UPS)

Power Factor Correction (PFC)

Quick reference

V_{DS} = 200 V

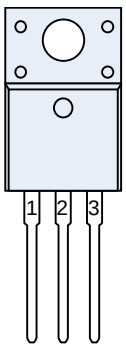
I_D = 28 A

$R_{DS(ON)}$ ≤ 100 mΩ @V_{GS} = 10 V（Type:80 mΩ）

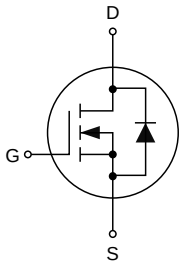
Pin Description

Pin	Description
1	Gate(G)
2	Drain(D)
3	Source(S)

Simplified Outline	Symbol



Top View
TO-220F



Package Marking and Ordering Information

Product Name	Package	Marking	Reel size	Tape width	Quantity (pcs)
KJ28N20CF	TO-220F	KJ28N20CF XXXYYY	N/A	N/A	1000

2. Absolute Maximum Ratings (T_C=25℃ unless otherwise noted)

Symbol	Parameter	Values	Unit
V_{DS}	Drain-Source Voltage, V_{GS}=0V	200	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Continuous Drain Current	28	A
I_{DM}	Pulsed Drain Current [1]	84	A
E_{AS}	Single Pulse Avalanche Energy [2]	340	mJ
P_D	Power Dissipation @T_C=25℃	104	W
T_J, T_{STG}	Operating Junction and Storage Temperature Range	-55~150	℃
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	62.5	℃/W
$R_{\theta JC}$	Thermal Resistance Junction to Case	1.2	℃/W

3. Electrical Characteristics (T_J=25℃, unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0 V, I_D=250 μA	200	220	-	V
I_{GSS}	Gate-body Leakage current	V_{DS}=0 V, V_{GS}=±20 V	-	-	±100	nA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=200 V, V_{GS}=0 V, T_J=25°C	-	-	5	μA
		V_{DS}=160 V, V_{GS}=0 V, T_J=125°C	-	-	100	
$V_{GS(th)}$	Gate-Threshold Voltage	V_{DS}=V_{GS}, I_D=250 μA	2	3	4	V
$R_{DS(on)}$	Drain-Source on-Resistance [3]	V_{GS}=10 V, I_D=9 A	-	80	100	mΩ
C_{iss}	Input Capacitance	V_{GS}=0 V, V_{DS}=25 V, f=1 MHz	-	1511	-	pF
C_{oss}	Output Capacitance		-	192	-	
C_{rss}	Reverse Transfer Capacitance		-	81	-	
Q_g	Total Gate Charge	V_{DS}=160 V, V_{GS}=10 V, I_D=18 A	-	43	-	nC
Q_{gs}	Gate-Source Charge		-	6	-	
Q_{gd}	Gate-Drain Charge		-	20	-	
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=100 V, R_G=25 Ω, I_D=18 A	-	24	-	ns
t_r	Turn-on Rise Time		-	46	-	
$t_{d(off)}$	Turn-off Delay Time		-	108	-	
t_f	Turn-off Fall Time		-	94	-	
I_S	Continuous Source Current	T_C=25℃	-	-	28	A
I_{SM}	Pulsed Diode Forward Current		-	-	84	A
V_{SD}	Diode Forward Voltage	T_J=25ºC, I_{SD}=18 A, V_{GS}=0 V	-	-	1.4	V
t_{rr}	Body Diode Reverse Recovery Time	V_{GS}=0 V, I_S=18 A, diF/dt=100 A/μs	-	233	-	ns
Q_{rr}	Body Diode Reverse Recovery Charge		-	1.9	-	μC

Notes:

1. The data tested by surface mounted on a 1 inch^2 FR-4 board with 2 OZ copper.
2. The EAS data shows Max. rating. I_{AS}=20 A, V_{DD}=50 V, R_G=25 Ω, Starting T_J=25ºC.
3. The test condition is Pulse Test: Pulse width ≤ 300 μs, Duty Cycle ≤ 1%.
4. The power dissipation is limited by 150℃ junction temperature.
5. The data is theoretically the same as I_D and I_{DM}, in real applications, should be limited by total power dissipation.

4. Typical Characteristics

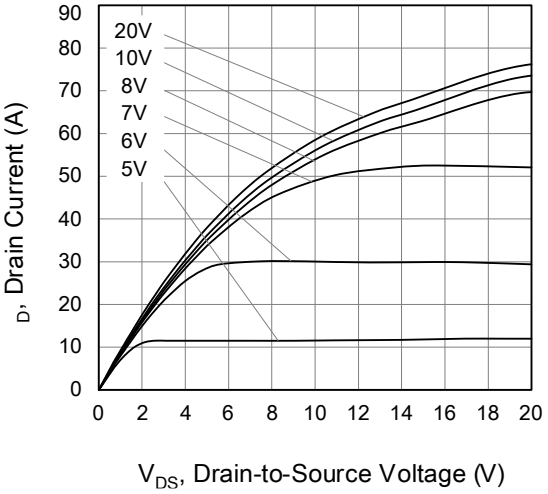


Figure1: Output Characteristics (T_J=25℃)

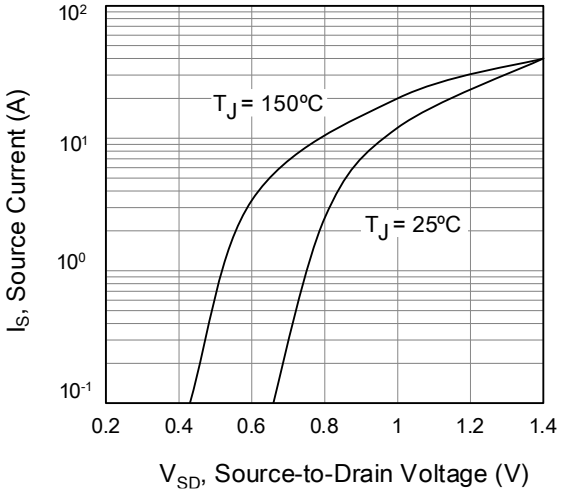


Figure 2: Body Diode Forward Voltage

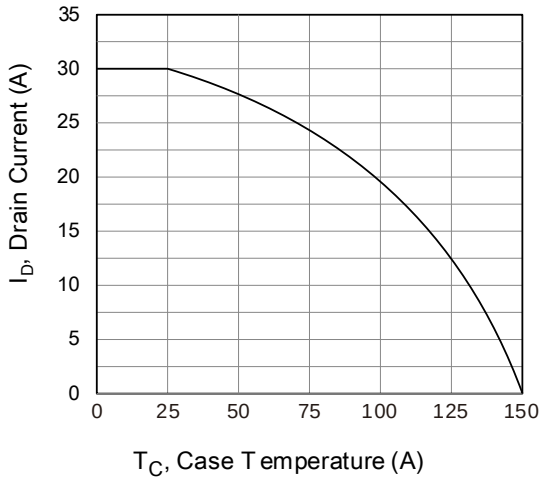


Figure 3: Drain Current vs. Temperature

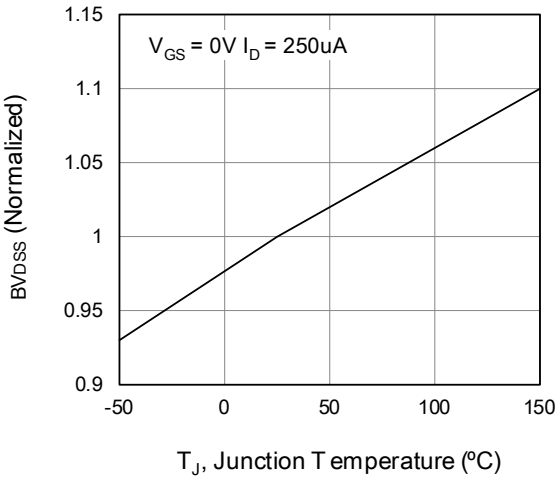


Figure 4: Body Diode Characteristics

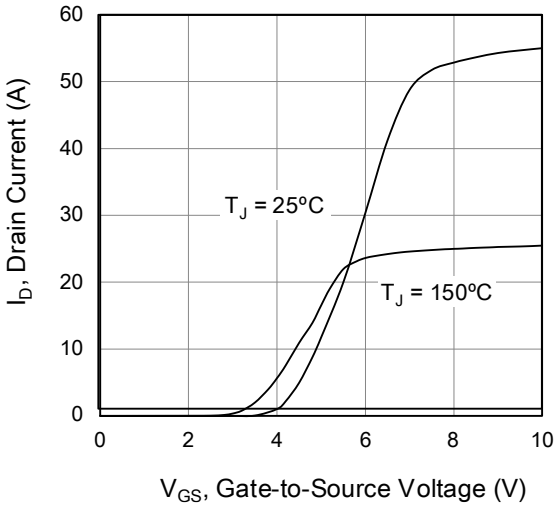


Figure 5: Transfer Characteristics

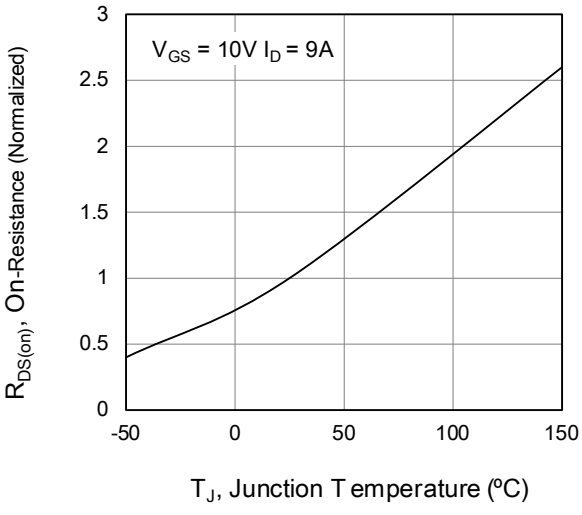


Figure 6: On-resistance vs. Temperature

4. Typical Characteristics (cont.)

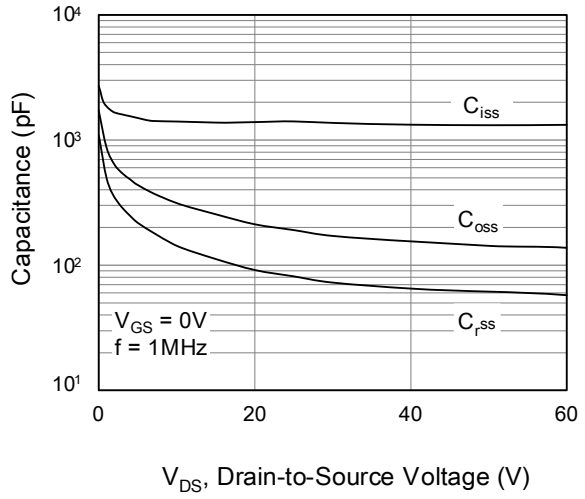


Figure 7: Capacitance

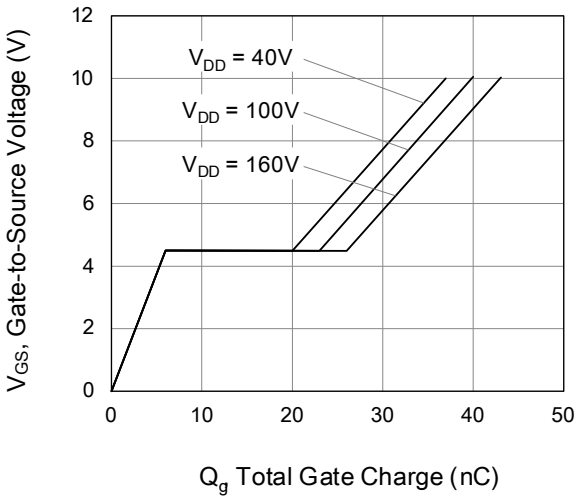


Figure 8: Gate Charge

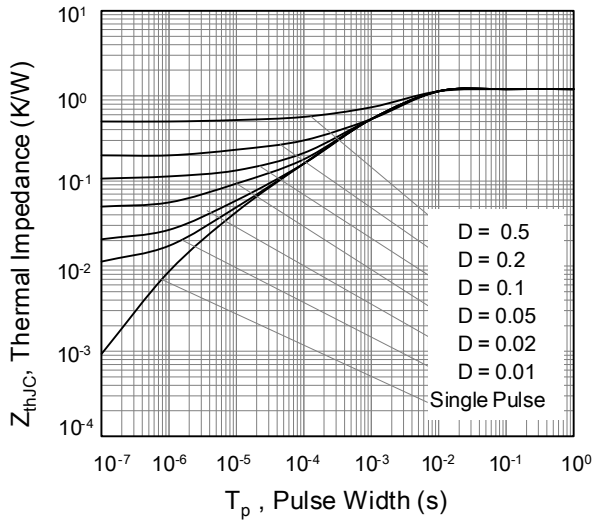
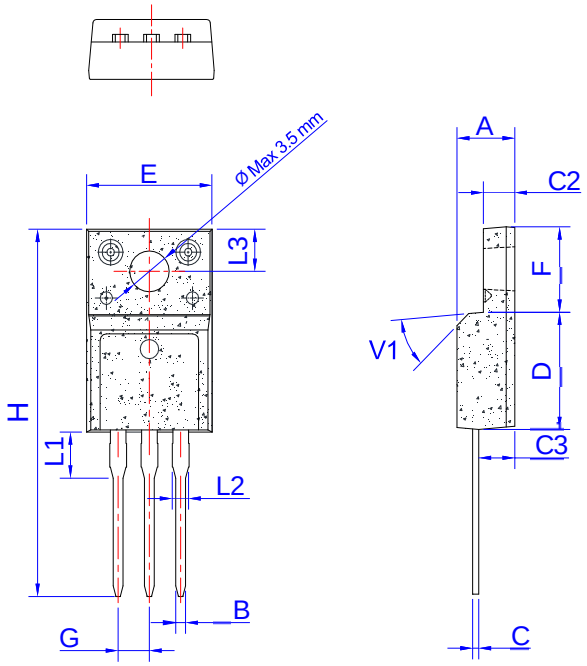


Figure 9: Transient Thermal Impedance

5. Package Mechanical Data

TO-220F Package



Symbol	Dimensions in Millimeters		
	MIN	NOM	MAX
A	4.50		4.90
B	0.74	0.80	0.83
C	0.47		0.65
C2	2.45		2.75
C3	2.60		3.00
D	8.80		9.30
E	9.80		10.4
F	6.40		6.80
G		2.54	
H	28.0		29.8
L1		3.63	
L2	1.14		1.70
L3		3.30	
V1		45°	